



# Waste Solutions for a Brighter Future

**GGI**energy  
Turning Waste into Energy

“GGI’s Mission is to help Organizations achieve Zero Waste to Improve their Social, Environmental and Financial Performance”

Presentation to City of El Paso  
Legislative Review Committee

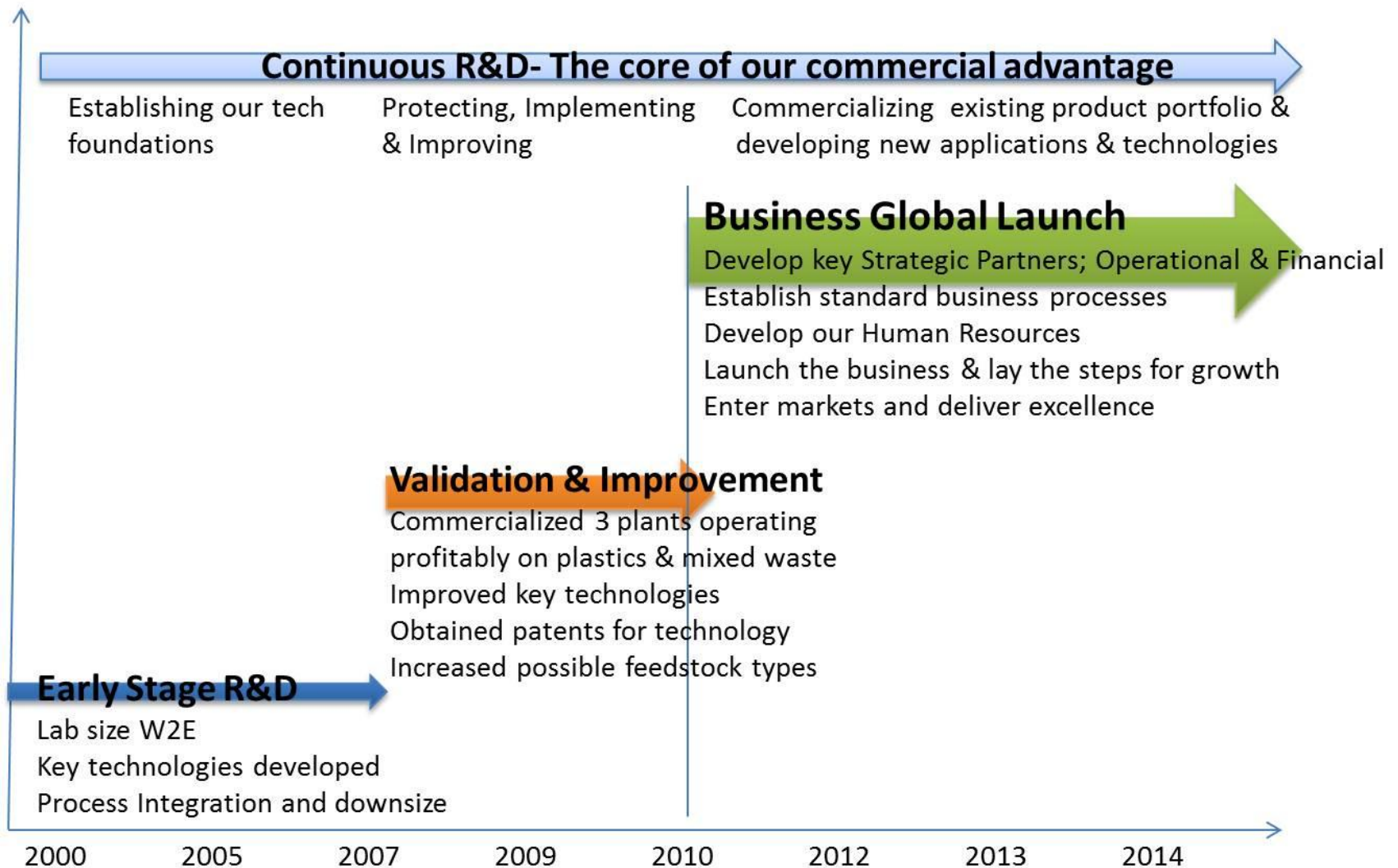
**GGI**<sup>TM</sup>energy  
Turning Waste into Energy

# GGI | Transform Organic Materials into Clean Energy

- **Proven Japanese technology** manufactured and deployed by Texas/American companies
- **Small-Scale Waste to Energy plants** to transform **any** type of organic **Waste & Materials** into **Diesel Fuel**
- Well known **Pyrolysis gasification technology (CTL)** to minimize emissions (no-incineration) and facilitate permitting
- **GGI** is a project developer, owner, and operator of renewable energy plants, providing a full solution to municipalities
- Network of **experienced and reliable project partners** to ensure successful project implementation
- **Experience in project lifecycle: 4-plants** operating safely and profitably in S. Korea since 2006 (Coal successfully tested). 24 plants in process for the US



# GGI | 12 years of Technology Development, Testing & Validation





# The Process | GGI Energy's Proprietary Process

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## Pre-Treatment **1**

waste is sorted, crushed, and dehydrated. Process is adapted depending on waste characteristics

### Waste types:

- Municipal Solid Waste
- Industrial & Commercial
- Crop Stalks & Bagasse
- Woodchip & Sawdust
- Animal Manure & Fat
- Food Residues & Oil
- Sewage Sludge

## Gasification **2**

feedstock is processed under highly controlled conditions using our proprietary technology

Waste is converted using our de-oxygenized pyrolysis process, which results in minimal air pollution and remarkably high gas yields

## Gas Conditioning **3**

syngas is purified and improved using our proprietary advanced nanoparticle technology

Any polluting elements are safely extracted, our plants have no toxic air emissions. The gas is improved with our advanced synthesis process.

## Liquid-Fuel **4**

enriched syngas is converted into market-grade, ready-to-use liquid fuels, like FT Diesel

The gas is refined on-site, resulting in commercial-grade liquid fuels for vehicles or power generation. By-products are re-used in the process.

WASTE



SYNGAS



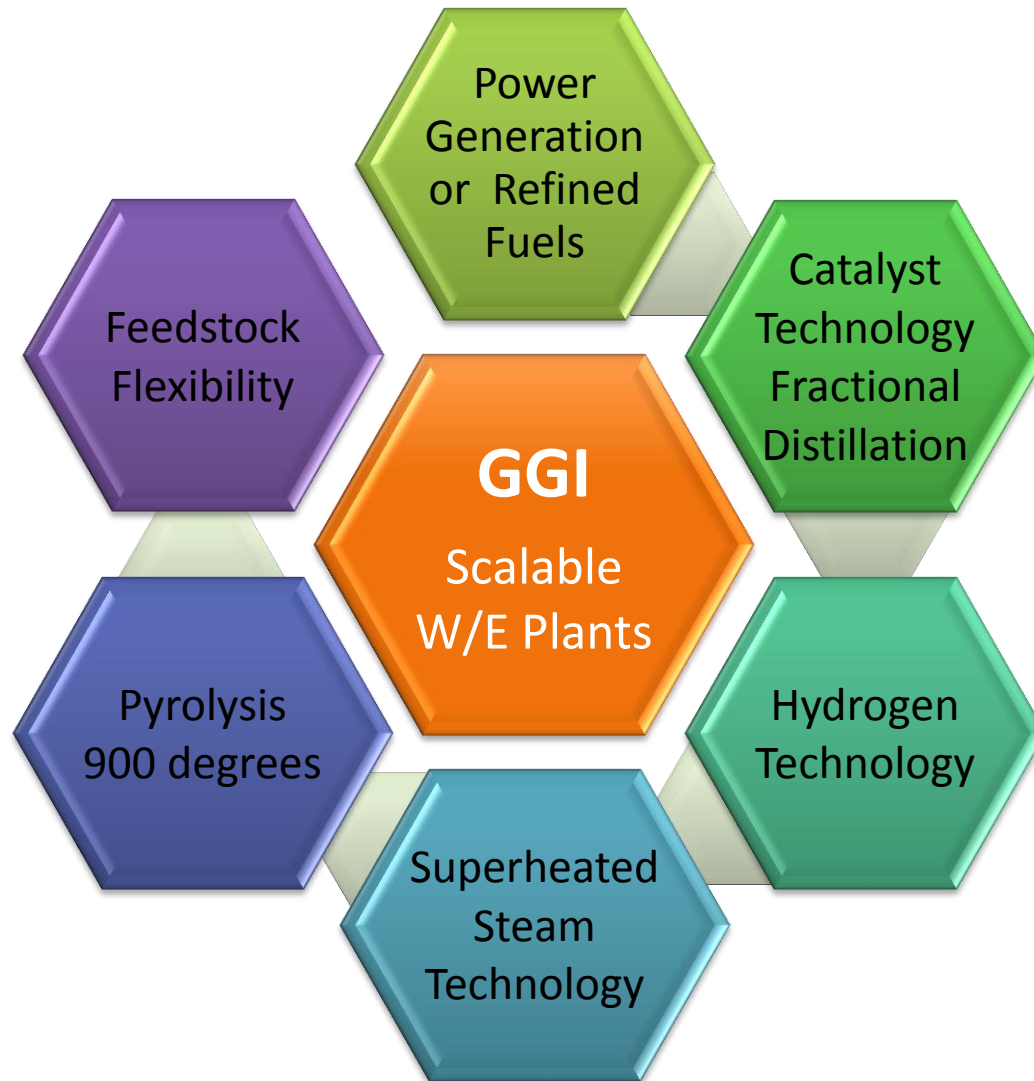
ENRICHED  
SYNGAS



RENEWABLE  
BIOFUELS

Or  
**ELECTRICITY**

# GGI | Key Technology Features



# GGI | Proprietary Gas Conditioning & Emissions Control Technology

**A**

**MICRO BUBBLE  
TECHNOLOGY TO  
PURIFY GAS, SPRAYING  
WATER AGAINST FLOW  
OF GAS TO REMOVE  
CONTAMINANTS,  
ABSORPTION OF 98%.**

**B**

**MAGNETIC ION  
EXCHANGE SCRUBBER  
TO ABSORB  
CONTAMINANT GASES  
(NO<sub>x</sub>, SO<sub>x</sub>, HCL, VOC...)  
TO CLEAN UP  
EMISSIONS AND  
ELIMINATE BAD SMELL.**

**C**

**SUPERHEATED STEAM  
TECHNOLOGY TO  
ENRICH SYN-GAS MIX  
AND VAPORIZE OXYGEN  
RESIDUES IN GAS,  
MAXIMIZES YIELDS.**



# GGI 25-tpd scrap tires plant (owned by Khumo) built in 2010



## **GGI | Strategic Deployment Network**

- Permitting & Engineering: **SCS Engineers** (Inspected technology prior to engaging with GGI)
- Construction: **CARCON Industries**
- Technology Provider & Equipment Design: **GGI Japan, Inc.**
- Technology Support: **Southwest Research Institute**
- Manufacturing/Assembly/Systems Integration: **General Dynamics & Automatic Products Corp.**
- Electronic Systems: **MCW Wireless**
- Installation: **General Dynamics**
- Recruitment: **HIS Bridge builders & Gateway to Special Abilities**
- Training, Maintenance & Operations: **GGI/W2E**
- Fuel purchase & distribution: **Mansfield Oil Co.**



# GGI| El Paso Waste to Energy Project

- 300 ton per day Waste to Energy Plant
- SAFE, CLEAN, RELIABLE, SUSTAINABLE Operation
- Plant will transform MSW into Diesel Fuel
- Located at McCombs Landfill Site
- Requesting 4 acres of land through a 40 year lease
- Requesting a waste supply agreement for 20 years
- GGI will invest \$65M in plant
- El Paso provides waste, pays reduced tipping fee (\$15)
- First option to purchase 1.2M gallons of fuel per year at 20% discount
- Potential Annual Savings for El Paso: **\$1,290,000**
- 120 Jobs will be created



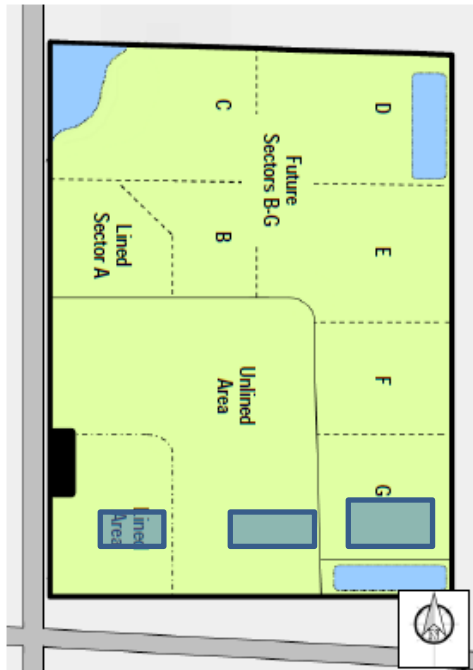
## GGI | Costs to the City of El Paso

- We estimate that the only costs to the City will be:
  - Technical review and approval of the proposal and evaluation of best potential site for the plant
  - Legal review and approval of waste supply and lease contracts
  - Review and approval of community awareness plan
  - Technical review and approval of proposed permitting modifications (all direct costs associated with permitting will be paid by GGI)

All of these costs will be in the form of man hours on the existing City staff and GGI hopes the process can be implemented promptly.

## GGI | Project Location

- McCombs Landfill
- 13600 McCombs St El Paso TX 79934



## GGI | City of El Paso Benefits

- **Savings:** Generate savings on landfill expenses and diesel fuel for the city.
- **Environmental:** Reduce carbon emissions by avoiding waste disposal and promoting use of renewable fuels.
- **Job Creation:** Plant will generate 120 new jobs.
- **Investment:** GGI will invest \$65 million dollars.
- **No Risk:** GGI is fully responsible for entire project through lifecycle.
- **Green Objectives:** Supports El Paso's long-term commitment to sustainability.
- **Reliability:** The system is highly reliable and operates continuously year round.
- **Facilities:** Maximize useful life of existing waste management infrastructure by extending landfill life.
- **Minimal Impact:** Create minimal impact in existing facilities and staff.
- **Technology:** Benefit from highly advanced technology without capital expenditure.
- **PR:** Improves City's green reputation.



## GGI | City Savings

Direct Benefits for El Paso, Texas	
Savings on Operating Expenses	
Current Operating Expense	\$19/ton
Tipping Fee to GGI	\$14/ton
Savings per ton	\$5/ton
Annual Savings (102,000 tons per year)	\$510,000
Savings on Diesel fuel	
Current Price	\$3.24 / gallon
Discount Per Gallon (20%)	\$0.65 / gallon
Gallons used by City	1,200,000/year
Annual Savings on Fuel	\$780,000
<u>Total Direct Financial Benefits per Year</u>	<b><u>\$1,290,000</u></b>

# GGI | Jobs

Employment Summary / Confidential /City of El Paso McCombs Location				
300 TPD (Gross) - W2E Plant – MSW				
Prepared for City of El Paso Review - CONFIDENTIAL				
Description	Yearly Base Salary	W/Benefits (40%)	# of Positions	Total Payroll
Management	90,000	126,000	3	378,000
Quality Assurance Leaders	60,000	84,000	2	168,000
Supervisors	48,000	67,200	15	1,008,000
Operators	31,200	43,680	100	4,368,000
<u>Total New Full time Positions</u>			<b>120</b>	
<u>Total Yearly Payroll</u>				<b><u>\$5,922,000</u></b>

## GGI | Proposed Project Timeline

Preliminary Council project support			31-Jan-12
City Legal review			28-Feb-12
Council Approval			31-Mar-12
Contract Execution			31-Mar-12
20-yr Feedstock supply agreement			
40-yr Ground lease			
Financing/Underwriting			30-Apr-12
Site survey & Permitting assessment			30-Apr-12
Equipment & Building design			30-May-12
Permit Submittal			30-May-12
Offsite Equipment Manufacturing			30-Jun-12
Site Preparation and Construction			28-Feb-13
Recruitment & Training			Ongoing
Installation			31-Apr-13
Testing & Commissioning			31-May-13
Operations start-up			Jun-13

## **CONTACT INFORMATION**

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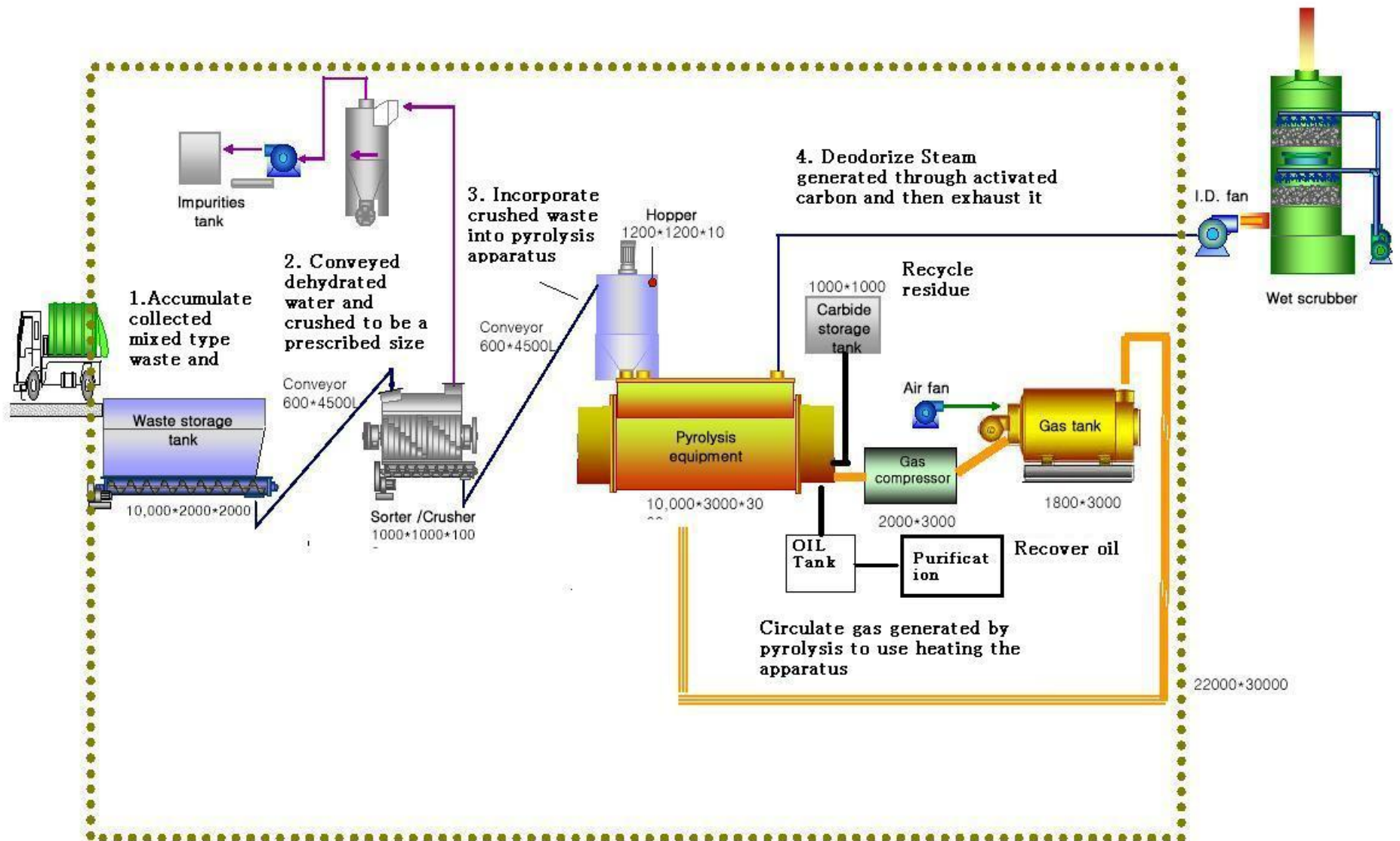
[kylefair@ggienergyinc.com](mailto:kylefair@ggienergyinc.com)



# Waste to Energy | Video Link

Video: <http://www.ggienergyinc.com/GGIVIDEO.wmv>

# GGI Process | Diagram



# GGI | US Key Competitors

- COVANTA ([www.covantaenergy.com](http://www.covantaenergy.com))
  - 44 W2E plants processing MSW into electricity
  - Large plants >1000 tons per day
  - Technology: Incineration → steam turbines
- ENERKEM ([www.enerkem.com](http://www.enerkem.com))
  - 1 W2E plants processing MSW into Methanol & Syngas
  - 2 under development to produce Ethanol
  - Technology: Thermochemical gasification + catalyst refining
- COSKATA ([www.coskata.com](http://www.coskata.com))
  - 1 semi-commercial W2E plant processing MSW into Ethanol
  - 1 under development to produce Ethanol
  - Technology: Thermochemical gasification+ bio fuel refining